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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,547	09/03/2004	Susumu Kayama	Q68919	1319
23373 7590 06/05/2008 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER VANOT, TIMOTHY C	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 06/05/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/506,547

Applicant(s)

KAYAMA ET AL.

Examiner

TIMOTHY C. VANOS

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-27 and 37-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-27 and 37-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Withdrawal of Finality

The Applicants' request to withdraw the finality of the Final Office Action mailed on Feb. 27, 2008 has been granted. Prosecution on the merits is re-opened in view of the new grounds of rejection. The Applicants' 116 Amendment filed on May 27, 2008 has been entered. The Applicants' time period for response is re-set to expire three months and zero days from the mailing date of this non-final Office Action.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

Claims 13-27 and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article titled *Property Control of High Purity Titanium Dioxide by Vapor Phase Oxidation Process* by Tatsuo Go et al.

Figure 1 on pg. 1168 in this Go article illustrates an apparatus (and thus also teaches the method) for producing titanium dioxide (please note the title of this Go article), comprising:

preheating an oxygen-containing gas (that may also comprise steam) to a temperature ranging from 900 to 1,100 °C in a pre-heater (3);

preheating a titanium tetrachloride gas to a temperature of 900 to 1,100 °C in a pre-heater (2);

passing the preheated oxygen-containing gas and the preheated titanium tetrachloride gas into a reactor (4) where they react together at a temperature ranging from 900 to 1,100 °C (please also see pg. 1168, left column, lines 14-17) for a period of time ranging from about 0.1 to 0.4 seconds (please also see pg. 1168, left column, lines 6-7) to produce the titanium dioxide product and a chlorine gas by-product (please see pg. 1168, left column, reaction 1).

Further, note that the powder storage bin (12) is equipped with a de-gassing system (evidently for removing any residual chlorine gas that contaminates the titanium dioxide product).

The differences between the Applicants' claims and this Go et al. article is that the Applicants' reaction temperatures overlap with the reaction temperatures set forth in the Go et al. article (the Applicants claim a reaction temperature of 900 to less than 1,000 °C whereas the Go et al. article discloses a reaction temperature ranging from 900 to 1,100 °C) and the Applicants' residence time touches the residence time of the Go et al. article (the Applicants claim a residence time of 0.1 seconds or less whereas the Go et al. article discloses a residence time of about 0.1 to 0.4 seconds), *however* it is submitted that these differences would have been obvious to one of ordinary skill in the art at the time the invention was made *because* the courts have already determined that the overlapping portion of a claimed range and a prior art reference's range establishes a *prima facie* case of obviousness: please note the discussion of the *In re Wertheim* 541 F.2d 257, 191 USPQ 90 (CCPA 1976) court decision set forth in section 2144.05(I) in the MPEP.

Claims 40-42 have not been rejected under either 35USC102 or 35USC103 because these claims have limited the residence times to values that are less than the 0.1 second time value disclosed in the Go et al. article.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 13-27 and 37-42 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 10-30 of copending Application No. 11-883,749. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of 10-506,547 and 11-883,749 disclose obvious variations of the same method for producing titanium dioxide by performing a vapor phase process of reacting a titanium tetrachloride-

containing gas with an oxidative gas to produce titanium dioxide, wherein the temperature in the reaction tube ranges from 1,050 to less than 1,300 °C.

The difference between the claims of 10-506,547 and the claims of 11-883,749 is that claim 13 in 10-506,547 sets forth that the residence time of the reagents in the reactor is 0.1 seconds or less (whereas claim 10 in 11-887,749 does not expressly recite this residence time limitation).

Claim 13 in 11-887,749 sets forth that the residence time of the reagents in the reactor ranges from 0.005 to 0.08 seconds.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set forth that claim 10 in 11-883,749 provides a residence time of 0.1 seconds or less for the reagents in the reactor, as set forth in claim 13 in 10-506,547, because claim 13 in 11-883,749 discloses at least an obvious variation of this residence time limitation.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 13-27 and 37-42 are directed to an invention not patentably distinct from claims 10-30 of commonly assigned 11-883,749 (for the reasons set forth in the above obviousness-type double patenting rejection).

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned 11-883,749, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly

assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), **either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.**

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

Response to Arguments

Applicants' arguments submitted with the Reply filed on Jan. 16, 2008 have been fully considered but they are not persuasive.

a) *The Applicants argue that Go et al. do not disclose the step of maintaining a residence time of the titanium halogenide-containing gas and the oxidative gas in the reactor at a temperature range of at least 800 °C but less than 1,100 °C for 0.1 seconds or less. The Applicants submit that the disclosure of a range of 0.1 to 0.4 seconds in Go et al. does not anticipate the range of 0.1 seconds or less as recited in the present claims. See Atofina vs. Great Lake Chem. Corp., 441 F.3d 991 (Fed. Cir. 2006), where the Federal Circuit made clear that the endpoints of a disclosed range are not a specific disclosure of the endpoints, and that an endpoint is not a disclosure of a specific*

embodiment of the claimed range. In the present case, since Go et al. only discloses a range having an endpoint that is the same as the endpoint in the present claims, then Go et al. do not anticipate the present claims.

The discussion of the *Atofina vs. Great Lakes Chem. Corp.* decision set forth in section 2131.03(II) in the MPEP has been studied, but the anticipation rejection is maintained because the MPEP states that "Prior art which teaches a range overlapping or touching the claimed range anticipates if the prior art range discloses the claimed range with "sufficient specificity"". In this case, the express disclosure in Go of a time period as low as 0.1 seconds, is "sufficiently specific" to anticipate the Applicants' claimed time period which may be as high as 0.1 seconds or less.

b) *The Applicants argue that if the residence time exceeds 0.1 seconds, anatase to rutile transformation or sintering of the particles proceed, and the desired effect of the present invention cannot be obtained. Comparative Example 1 in the present application used a residence time of 0.2 seconds (which is within the range of 0.1 to 0.4 seconds disclosed by Go et al.), but did not achieve the desired effect of the present invention.*

The 0.1 to 0.4 second time period taught in the Go et al. reference is not limited to the 0.2 second time period that the Applicants argue produces undesirable results.

The Applicants' arguments submitted with their 116 Amendment filed on May 27, 2008 have been considered, but are moot in view of the new grounds of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY C. VANOY whose telephone number is (571)272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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